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LOW-INTENSITY CONFLICT
A CHEMICAL CORPS ROLE?

BY

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The increased focus on the lower end of the spectrum of conflict, particularly low-intensity conflict (LIC) itself, highlights the critical balance which must be obtained between rapid deployment and mission capability. Combat support and combat service support activities must be able to demonstrate a direct application to mission accomplishment or be relegated to follow-on forces which can only be brought into theater when time and lift assets allow. The role played by the Chemical Corps in chemical-biological (CB) defense is acknowledged and recognized throughout the Army, but what if an immediate CB threat is

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lacking? If Chemical Corps units and personnel cannot perform any other roles which will contribute directly to mission accomplishment, then they are not needed on the battlefield. On the other hand, if there are unique missions which these forces can accomplish which effectively serve to multiply the overall effectiveness of the force, then they should be deployed into theater early. This study looks at lessons learned from previous combat operations performed by Chemical Corps personnel and units in an attempt to assess the validity of a present role in LIC. Experience shows that smoke and flame operations, used properly, can be effective combat multipliers, particularly in LIC. Riot control agents may have a significant tactical role even subject to current Presidential restrictions. Herbicides, on the other hand, may no longer be a viable tactical consideration given the regulatory constraints. The study also attempts to highlight the need for continuing training, materiel development, and ammunition procurement as well as necessary force structure stabilizations which can ensure a future capability when needed.

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LOW-INTENSITY CONFLICT
A CHEMICAL CORPS ROLE?

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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The increased focus on the lower end of the spectrum of conflict, particularly low-intensity conflict (LIC) itself, highlights the critical balance which must be obtained between rapid deployment and mission capability. Combat support and combat service support activities must be able to demonstrate a direct application to mission accomplishment or be relegated to follow-on forces which can only be brought into theater when time and lift assets allow. The role played by the Chemical Corps in chemical-biological (CB) defense is acknowledged and recognized throughout the Army, but what if an immediate CB threat is lacking? If Chemical Corps units and personnel cannot perform any other roles which will contribute directly to mission accomplishment, then they are not needed on the battlefield. On the other hand, if there are unique missions which these forces can accomplish which effectively serve to multiply the overall effectiveness of the force, then they should be deployed into theater early. This study looks at lessons learned from previous combat operations performed by Chemical Corps personnel and units in an attempt to assess the validity of a present role in LIC. Experience shows that smoke and flame operations, used properly, can be effective combat multipliers, particularly in LIC. Riot control agents may have a significant tactical role even subject to current Presidential restrictions. Herbicides, on the other hand, may no longer be a viable tactical consideration given the regulatory constraints. The study also attempts to highlight the need for continuing training, materiel development, and ammunition procurement as well as necessary force structure stabilizations which can ensure a future capability when needed.

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CHAPTER I

LOW RISK, HIGH PROBABILITY

Low-intensity conflict, an apparently simple term, can be deceivingly complex. The images conjured up are as varied as the myriad of definitions which have been offered forth in the past few years. One basic tenet seems to hold constant however: involvement by the United States in a low-intensity conflict (LIC) will entail only those forces and resources which can materially contribute to the efforts and are necessary for successful mission accomplishment. The Chemical Corps, with a history born in battle, has its role most closely identified with conflicts at the extreme other end of the spectrum. Accordingly some assume there is no role for Chemical Corps units or personnel in the LIC environment. If that is true, force structure and resources should be allocated appropriately. If the assumption is false, then we must make sure we not only clearly identify a LIC role for the Chemical Corps, but also plan to provide the structure and training necessary to accomplish that mission.

The nature of the chemical threat to U.S. forces in a LIC environment will be discussed briefly, but will not be the primary focus of this study. It is hypothesized that should intelligence sources indicate an active CB threat, the need for chemical troops in a theater of operations would be a given. Likewise this study will limit its focus primarily to possible

roles and functions in only one aspect of LIC, counterinsurgency operations, as that is the level where US combat units are most likely to be committed in force. Past experiences will be used to provide indications of capabilities and potential future contributions, if any, will be extrapolated from that base.

THE NATURE OF LIC

Before any discussion can begin as to a role for the Chemical Corps to play in a low-intensity conflict environment, it is first necessary to define some key terms. Perhaps few topics have generated as much writing and discussion within the United States military community in general and the United States Army in particular as the subject of LIC. The number of definitions circulating is extensive. While most observers seem to have a fairly good concept of what LIC is not, a significantly smaller number have a clear concept of what it is. Perhaps the most widely accepted current definition of LIC is that it is:

> "...a limited politico-military struggle to achieve political, social, economic or psychological objectives. It is often protracted and ranges from diplomatic, economic, and psycho-social pressures through terrorism and insurgency. It is generally confined to a geographic area and is often characterized by constraints on the weaponry, tactics, and level of violence."[1]

Recognizing that this definition creates some significant problems as far as specific concepts, it is, apparently by design, sufficiently broad to encompass all aspects of a large variety of activities. The United States acknowledges that the threat of LIC is directly counter to a climate of world peace and stability, yet at the same time realizes that the primary role for US

Armed Forces is in support of security assistance programs.[2] Thus while US policy recognizes that the indirect application of military power will frequently be the most appropriate and cost-effective approach in LIC, provision must also made for the United States to engage in combat operations during LIC when vital interests cannot be protected by other means. There can be little doubt as to where LIC ranks among US concerns as indicated by remarks of former Secretary Defense Carlucci in his annual report to the Congress in 1988:

> "LIC is one of the most serious challenges to our security that we face today, and our survival and well-being could depend on how we comprehend the threat and respond to it."[3]

Within the all-encompassing definition of low-intensity conflict US military operations fall into four operational categories, specifically: peacekeeping operations, peacetime contingency operations, terrorism counteraction, and counter-insurgency operations. By their very nature, these categories are not mutually exclusive, nor are they so narrowly defined as to limit the nature of the threat a priori. Peace-keeping operations are conducted to restore or maintain peace in an area and are usually in conjunction with diplomatic efforts. Since the key to successful peacekeeping lies in lessening hostilities or maintaining civil order, techniques which focus on a police-type role are generally most appropriate. Peacetime contingency operations normally entail short term, rapid employment of forces in situations short of conventional war. Examples might include strike operations, rescues, intelligence gathering, or simply show of force. Terrorism counteraction includes both defensive

and offensive measures. While all Army units undertake defensive measures to reduce their vulnerability to terrorist attack, offensive missions against terrorists are usually confined to Special Operations Forces. It is in the area of counter-insurgency operations that the involvement of significant military forces is found. There are three distinct phases to an insurgency and different forces are required to counter each phase. In the first phase, the insurgents focus on building an infrastructure, while conducting limited psychological and terrorist attacks against the government. The second phase, often termed guerilla warfare, is indicated by an increased level of organized military actions. Finally, in phase three, a "war of movement" begins and is marked by confrontations with large insurgent forces and may even include organized armed forces from a supporting nation on a limited scale. It is in counter-insurgency operations, particularly the second and third phases, that the light infantry divisions recently formed in the Army would play a major role.[4] Obviously, when attempting to determine a role for the Chemical Corps in the LIC environment, it is not difficult to postulate a scenario involving, as a minimum, chemical defense operations, within any of the four LIC categories. As can be shown, this becomes more realistic every day with the increased proliferation of chemical weapons around the world.

THE CHEMICAL THREAT

Discussions of chemical warfare and chemical weapons have,

in the past, centered mainly on the two nations with the most significant capabilities, both offensive and defensive, the Soviet Union and the United States. Yet there has been an ever increasing trend toward the acquisition of a chemical capability by Third World nations which has begun to accelerate in recent years. In 1985 estimates were that 11 countries had chemical capabilities[5], while by 1987, estimates were up to as high as 24 nations.[6] This proliferation serves to significantly increase the threat to US Forces involved in LIC as the availability of technology has enhanced the spread of these weapons to developing nations. We are not immune even in our own hemisphere. It has been noted that Cuba, having received technology from the Soviet Union, now has the capability to produce both chemical agents as well as toxins and has even completed a chemical warfare training center in Limonar, just 80 miles east of Havana.[7] The potential for terrorist use of chemical and biological weapons is significant and increasing almost daily.[8] World attention has also been drawn to the terrorist threat as a direct result of public US concern for the construction of a chemical plant in Libya.[9]

Clearly, if US Forces are committed in any role from support of security assistance programs to actual combat operations themselves, a careful analysis of the potential threat must be made to determine the requirements for chemical defense. Should intelligence estimates indicate an immediate threat exists, there is no question as to what role the Chemical Corps must play. The specialized skills which will enable units to defend against and

identify chemical attacks and continue operations come from chemical soldiers and chemical units. But what if a clearly defined chemical threat does not appear in the operational intelligence estimates? Commanders, rightfully concerned with space and weight limitations which impact on the ability to rapidly deploy, will never want to carry "excess baggage". If a unit or individual cannot contribute to the overall accomplishment of the mission, that space on the plane will pass to others who can. Despite the increasing evidence of the proliferation of chemical weapons cited earlier, many commanders view the likelihood of encountering CB weapons, at least during the early phase of LIC involvement, as minimal, particularly if there is no specific intelligence information to the contrary. As a result, chemical personnel, units, and equipment are often placed in a status where they can be called forward at a later time if needed. This type of risk-taking is considered audacious by some and extreme by others. If in fact the only contributions which Chemical Corps personnel could make were in the realm of CB defense, it might be the correct choice.

COUNTERINSURGENCY OPERATIONS

Within the realm of low-intensity conflict, it is clearly in the category of counterinsurgency operations where combat operations ranging from small unit actions up to even brigade-sized or larger operations may be encountered against organized enemy field forces. The Army, in recognition of just this type of threat, has made significant investments in the organizing and

equipping of light forces which are ostensibly capable of rapid deployment to an area of potential conflict with the intent of either deterring combat through a rapid show of strength or providing adequate combat power to bring a conflict to a favorable conclusion for the US and its allies. In this scenario, a natural trade-off exists between combat power and load. Every unit, every soldier, every item seeking space on a deploying aircraft must be able to make a clearly discernible contribution to the overall success of the mission. With a clear need to get adequate combat power on the ground as rapidly as possible, combat support and combat service support units are required to justify their space or be placed in a follow-on status. For Chemical Corps units, this justification has been tied in the past almost exclusively to the chemical-biological (CB) threat. The purpose of this paper is to examine the roles that chemical soldiers and chemical units might be able to play in a LIC environment and highlight any capabilities which would serve to enhance mission effectiveness. It is certainly not the intent of this paper to downplay the significance of the CB defense role, particularly in light of the proliferation of chemical weapons. Rather it is an accepted premise that should intelligence data ever indicate the potential for such weapons to be used against US Forces, the Chemical Corps soldier will assume the traditional lead in dealing with defense against that threat. Yet history has demonstrated that Chemical Corps personnel are more than simply experts in nuclear, biological, and chemical operations. They are also trained in a number of skills which can provide a

commander with a significant, yet often unexpected, combat multiplier in the low-intensity environment.

We will begin with a look at those missions performed in the past by chemical soldiers in similar environments in order to try to identify those which can most clearly offer an advantage to a commander engaged in LIC today. Although the primary focus will be on the category of counterinsurgency operations, it is important to remember nonetheless that the direct or indirect application of military power within any of the other categories of LIC may as well entail the utilization of the technical expertise of Chemical Corps personnel in highly specialized roles. A review of the types of functions performed by chemical soldiers in similar operations in the past indicate possible areas where meaningful contributions can be made today. The conflict in Vietnam provided US forces with many lessons learned in an intense counterinsurgency environment. By addressing such Chemical Corps roles in Vietnam as the use of riot control agents and herbicides as well as smoke and flame operations, it may be possible to provide some insight into potential capabilities beyond basic CB defense.

Despite the fact that toxic weapons were not employed during the Vietnam conflict, Chemical Corps personnel were still able to make significant and meaningful contributions. It is important that many of those lessons which were learned, often at no small cost, during previous conflicts, not be lost, but rather that they be pulled from the shelf, dusted off, re-examined, updated if necessary, and applied to present operations. Likewise

an eye should be cast toward the future to see what other developments may come along which could enhance the combat commander's ability to accomplish his mission.

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CHAPTER II

CB WARFARE?

During the course of a number of conflicts in the last 30 years, and particularly during the Vietnam conflict, a great deal of effort was put into developing concepts for the employment of riot control agents (RCA) and herbicides against a determined yet elusive enemy. Although ostensibly introducing the tactical use of riot control agents and herbicides in Vietnam as a means of minimizing casualties, the United States came under a great deal of criticism from the international community. As early as 1966 in the United Nations General Assembly, Hungary accused the US of employing chemical and biological weapons in Vietnam, with specific references to riot control agents and herbicides.[1] The US position was simply that the charges were nothing more than propaganda and pointed out that more than 50 nations freely acknowledged the use of tear gasses for domestic riot-control and that the herbicides being used involved the same chemicals and had the same effects as those commonly used in the United States and other countries to clear weeds and control vegetation.[2] Furthermore, regarding the Geneva Protocol of 1925, to which the United States was not at that time a signatory, it was the contention of the US that the use of RCAs and herbicides did not in fact constitute gas warfare as prohibited and thus US actions were not out of line with the announced national policy of no first use of was gasses.[3] It was also stated that:

> "... because of the fact that the treaty is based on the unnecessary suffering principle of the law of war, a strong legal argument has been made that the protocol applies only to the use in war of those chemical agents which are lethal or severely injurious."[4]

The continuing international furor, however, led to an announcement in 1969 by President Nixon which clearly defined chemical warfare from US terms and specifically excluded riot control agents and herbicides from such definitions.[5]

RIOT CONTROL AGENTS

Riot Control Agents (RCA) comprise a family of substances which were initially developed for domestic use, as their name implies, in the control of mobs of rioters. The intent was to disable the rioter, but not to kill or permanently injure him. As a result of this need, a family of riot control agents were developed which had very low lethality rates yet were rapid acting and temporarily disabling. Use of these substances became common practice among police forces both in this country and worldwide. RCAs enabled law enforcement elements to quickly and safely subdue rioters without the risk of causing permanent injury or death.

As the conflict in Vietnam expanded in scope, it became apparent that the nature of the conflict, as is common in LIC, was such that the enemy was frequently mixed among innocent noncombatants. Field commanders were concerned that the direct application of firepower would only result in unnecessary civilian casualties. The use of riot control agents was seen as a possible solution to this dilemma. The primary agent of choice

was orthochlorobenzalmalonitrile, more commonly known as CS. This particular agent had been approved for general use during training by the Army as well as for domestic employment in riot control situations. The first documented use of CS by US Forces occurred in December 1964 when CS-filled grenades were air-dropped to disrupt enemy forces and assist in a prisoner rescue effort in An Xuyen Province.[6] In February 1965, Military Assistance Command, Vietnam (MACV) authorized the use of CS munitions by US Forces in defensive roles only.[7] The use of these weapons was expanded in September 1965 after elements of the 2nd Battalion, 7th Marine Regiment encountered an enemy force entrenched in bunkers, tunnels, and "spider holes". They had intelligence reports which indicated that women and children were also present among the enemy troops. The Marine commander directed the use of CS to flush the enemy from his prepared positions. The result was that 400 persons were seized from the fortified positions without any serious injury to any of the non-combatants.[8] By November 1965, MACV had removed all constraints on the use of RCAs in Vietnam.[9] This began a period of extensive and innovative use which continued until the end of US involvement.

As field experience working with RCAs increased, chemical personnel developed many new and varied uses and employment techniques. The clearing of enemy forces from tunnels and bunker complexes became almost second nature.[10] One technique which proved particularly effective involved exploding bags of powdered CS inside tunnel entrances, forcing the dust into the tunnel

using M106 Mighty Mite blowers, and then sealing the tunnels.[11] Many individual units developed their own field-expedient devices. Units within the 1st Infantry Division reported these techniques made tunnels unusable by unprotected troops for periods of 5-6 months.[12] There were also potential hazards, especially if non-combatants were involved. There was evidence that lethal concentrations of CS could build up in the confined tunnel spaces and result in death if an individual did not exit.[13] New missions such as use in perimeter defense, counter-ambush, and terrain restriction rapidly expanded the chemical soldier's arsenal. Techniques were also developed for contaminating sections of terrain by means of air-dropped bulk CS.[14,15] Using CH-47 Chinook helicopters, up to 30 drums, each containing 80 pounds of CS powder, were loaded onto locally fabricated racks. This allowed the drums to be rapidly rolled out the rear of the helicopter once it was over the target area. Bursters in the drums allowed the CS to be spread over a wide area. Primary targets were infiltration routes, rest areas, and known or suspected enemy base camps.[16] Combat experience quickly demonstrated the effectiveness of RCAs during close-in fighting in cities such as Hue and Saigon.[17] Efforts to use RCAs in preparatory fires on landing zones prior to a combat assault or in the protection of ground convoys proved particularly effective. Faced with the problem of disposing of large enemy rice caches which could not be evacuated from the battlefield, US troops placed explosives and bags of CS among the rice piles. Upon detonation the rice was scattered over a large area and was

contaminated with CS crystals which made it unusable.[13] As new and innovative uses were developed, efforts were made to also develop compatible weapon systems.[19] Existing systems such as the 40-mm grenade launcher, 2.75-inch rocket launcher, and 105-mm howitzer had CS rounds developed, while new systems such as the E-8 launcher and E-158/159 aerial dispensers were developed to try and fill special needs.[20]

The use of riot control agents was particularly effective in Vietnam because the enemy forces, both Viet Cong and North Vietnamese, had little if any effective protection against agents which acted primarily on the eyes and respiratory tract. Because of their effectiveness, RCAs such as CS were credited with saving the lives of many allied soldiers, civilians, and even enemy soldiers when the only alternative to RCA use would have been lethal firepower.[21]

HERBICIDES

In addition to riot control agents, the United States also made extensive use of herbicides during the course of the Vietnam conflict. Beginning in 1962, an Army-led research team recommended the institution of a defoliation program.[22] This was later expanded at the urging of the South Vietnamese Government, to include anti-crop activities also.[23] The purpose of the herbicide program was to deny concealment and food sources to an elusive enemy. Defoliation targets included lines of communication, avenues of approach, and enemy bases and installations.[24] The anti-crop program was specifically targeted

on remote areas of known enemy use which had population densities not exceeding 200 per square mile.[25,26] Overall, approximately 90% of the herbicide program was focused on defoliation and the remaining 10% on anti-crop missions.[27] Under the auspices of a program named Operation Ranch Hand, the United States began to conduct an extensive air-delivered defoliation campaign in January 1962.[28] The focus of the operation was on clearing enemy infiltration routes to allow surveillance from the air. Responsibility for general coordination of the program and technical guidance fell under the auspices of the Chemical Operations Division of MACV J-3 (operations directorate).[29] In addition, defoliation was used to enhance aerial search techniques to locate and destroy enemy base camps and weapons caches.[30] Operation Ranch Hand was brought to a close in January 1971. During the nine years of activity, 17-19 million gallons of herbicide were sprayed covering an area of approximately 6 million acres.[31] Defoliation operations were also conducted by chemical personnel in Army units on a smaller scale. Using helicopter delivered sprays and ground-based operations in the vicinity of friendly base camp perimeters, they could enhance visibility and clear fields of fire.[32] The effectiveness of these operations resulted in their being cited as contributing to tactical success.[33]

An analysis of the effectiveness of the herbicide program in Vietnam gives mixed results. The Herbicide Review Committee established by Ambassador Ellsworth Bunker stated they "recognized the military worth of defoliation beyond any doubt".[34]

While the use of defoliants to clear perimeters and enhance fields of fire were seen as favorable uses, there is evidence to indicate that the clearing of roadside vegetation on convoy routes may have actually enhanced enemy ambushes by clearing their fields of fire.[35] While captured enemy attested to the impact of defoliation operations, particularly in exposing base camp locations,[36] there is also evidence to indicate that the non-combatant civilian population suffered most in the crop destruction aspect of the program.[37] This, of, course was due to the fact that the insurgents and enemy troops were intermingled with, and stole a great deal of their provisions from, the civilian populace. The result was often adverse political and psychological costs.[38] On the positive side, there was clear evidence that the crop destruction often forced the enemy to divert units from tactical missions to food procurement, thereby weakening their combat potential.[39]

Often times innovation was the key to success and time and again it was the ideas of the individual chemical soldier applied to a specific situation which led to the ultimate solution. Military effectiveness notwithstanding, the United States continued to receive international criticism for the use of RCAs and herbicides, even after the conflict had ended. As a result, President Ford issued Executive Order 11850 on 8 April 1975 which prohibited US first use of riot control agents except in narrowly defined defensive modes to save lives and renounced any first use of herbicides in war except under domestic regulations for vegetation control in and around US bases.[40] Any exceptions

are subject to presidential approval. In addition, the US Senate ratified the Geneva Protocol of 1925, which tended to formalize US national policy among the international community.

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CHAPTER III

WHERE THERE'S SMOKE . . .

The use of smoke and incendiary weapons in war can be traced to earliest times. While their contributions as combat multipliers have frequently been well documented, it is often necessary, particularly for US Forces, to rediscover the basics. The resurgence of interest in these weapons to support Airland Battle doctrine is a case in point. However the utility of smoke and flame weapons is not confined solely to mid- or high-intensity conflict, but rather they have a proven application across the entire spectrum of conflict. Often the only limits are the ingenuity of those employing them.

SMOKE OPERATIONS

Large area smoke operations have been used effectively on numerous occasions in the last 50 years. Properly employed, smoke can deny critical information to an enemy, enhance friendly deception operations, facilitate economy of force actions, or even force the enemy into an unfavorable course of action. World War II saw the major introduction of smoke operations by organized Chemical Corps smoke units as exemplified by actions at Anzio[1] and in the Huertgen Forest[2]. The effective use of smoke units continued into the Korean War. Virtually continuous smoke operations by the 338th Smoke Generator Company from November 1952 to July 1953 in the vicinity of Pork Chop Hill clearly

demonstrated the contributions which could be made.[3] These same lessons are being reinforced today at the National Training Center. Yet while acknowledging a role for large area smoke at the upper end of the spectrum of conflict, many question its usefulness in a low-intensity environment. The experiences of US Forces in Vietnam serve as a good indicator of and provide clues to those capabilities.

It is important to remember that US policy places no restrictions on the use of smoke in combat operations like it does for riot control agents and herbicides. During the Vietnam conflict, large area smoke operations were not found to be generally viable because of the general nature of combat operations in that environment. A single chemical smoke generator company was the only unit brought into country.[4] The use of smoke in support of combat operations was on a smaller scale and the direct result of the ingenuity of the chemical soldiers eager to find a way to enhance friendly capabilities. Techniques were developed to use smoke effectively to mask air assault operations, thereby effectively screening movement, and thus increasing the element of surprise[5]. Chemical soldiers also found methods of using smoke which aided in tunnel clearing operations. Smoke was forced into tunnel entrances, and as it exited through vents and other hidden exits, the layout of an elaborate complex could be charted.[6,7] One of the most unique methods of producing smoke in Vietnam was the helicopter-mounted XM-52 system. This was an integrated system whereby smoke generator fog oil was pumped directly into the engine exhaust stream of a UH-1 helicopter. The result was a

thick white cloud of smoke which rapidly settled toward the surface, effectively blocking all visibility from the ground. The capacity of the helicopter was such that continuous smoke could be provided for up to eight minutes.[8] Initial efforts with the system were so effective that a contract was awarded for a total of 121 of the systems. They were used by a variety of combat units on such missions as screening landing zones during combat assaults, concealing the route of helicopter movements, assisting in medical evacuation operations, and even as a diversionary tactic by smoking in unused landing zones.[9] The helicopter system provided a significant compliment to artillery and aerial rocket delivered smoke in that it could provide greater quantities more rapidly. The vulnerability of the smoke helicopter was reduced by flying low, at tree top level, and thus reducing exposure time to ground fire. The majority of projected smoke capabilities from artillery and rockets were a by-product of the employment of white phosphorous rounds which created an instant white smoke cloud in addition to their burning effects.

FLAME OPERATIONS

Flame weapons and munitions were a different matter. The significance of flame in warfare had long been recognized. Dating as far back as 2400 B.C., strategists have historically seen advantages for flame weapons. In contrast to blast which is self-limiting, incendiary weapons have a longer duration of action and cause greater terror and disruption than a comparable amount of explosives.[10] Man, like other animals, has a natural

fear of flame, which tends to amplify its effects. The first modern flamethrowers were used against the British by the Germans in 1915. The effects were dramatic and, at the time, it was noted that:

> "The value of flame at the time was principally psychological -- the fiery spurt of burning oil, the roar of the flame, and the billowing clouds of black smoke had a terrifying effect on troops in the trenches ... The flame projector, ... became a responsibility of the chemical warfare services."[11]

The first use of a flame tank was by the Italians in Ethiopia during the period 1935-1936.[12] The United States first began extensive use of flame weapons in the Pacific Theater during World War II to flush the enemy from caves and tunnels or kill him outright.[13] French success with flame in Indochina during the period from 1946 to 1954 gave ample evidence of flame's double effect -- destroying cover and concealment as well as the enemy.[14] During the US involvement in Vietnam, extensive use was made of both conventional flame weapons and also field expedient devices using thickened fuel. The flame field expedients (FFEs) became the almost exclusive property of the Chemical Corps soldier. Developing and modifying techniques for mixing and employing these weapons, chemical soldiers utilized these devices in many ways.

Flame field expedients were used most extensively as a defensive weapon and proved particularly effective in enhancing perimeter defenses at firebases and remote outposts. Using containers of thickened gasoline, up to and including 55-gallon drums, chemical personnel integrated the FFEs into the general defensive scheme. Detonation was generally controlled from fixed

positions and triggered by standard devices such as claymore mines. The effects on attacking enemy were devastating. Exploding devices produced immediate casualties from both flame and shrapnel. The thickened fuel which was spread would stick to a target and was difficult to extinguish.[15] The devices were also used to provide early warning, illuminate the battlefield, and canalize the enemy.

Flame weapons were not confined to a defensive role in Vietnam. The extra measure of combat power and the negative psychological impact on enemy operations combined with other elements to defeat the enemy's ability and will to fight. During Operation Junction City and Operation Cedar Falls in Vietnam, US Forces used flame weapons and inflicted numerous casualties and severe psychological effects on the enemy.[16] Mechanized flame throwers were utilized against entrenched enemy troops and also in an attempt at land clearing. Although 1st Division elements found the flame weapons to be particularly effective to assault bunkers and tunnels, the land clearing was not as successful since the lush green jungle refused to burn well.[17] Elsewhere chemical personnel developed techniques for dropping 55-gallon drums of thickened fuel onto suspected enemy locations, hidden weapon caches, and even potential landing zones.[18] Carried by CH-47 aircraft, up to 18 drums (900 gallons) could be carried in a single sortie. During a one month period from April to May 1970, the 101st Airborne Division alone dropped almost 2000 drums in support of clearing operations.[19]

The inherent flexibility of FFEs led to the frequent use of

thickened fuels in improvised mines and other devices for ambushes, destruction of enemy villages and crops, and clearing of cover and vegetation around base camp perimeters.[20] The XM-191 or Flash was introduced in 1969 as a replacement for the old man-portable flamethrower. Consisting of a launcher and four rockets, the XM-191 provided the combat soldier with a stand-off infantry flame weapon.[21] Incendiary weapons proved to be an efficient weapon system against guerilla forces or poorly trained regular forces. The capability, of course, was not confined to US Forces, however the enemy never appeared to develop an adequate logistics base, particularly for fuel, to support extensive flame operations. On 2 November 1967 however, during an attack on the perimeter of a night defensive position of the 1st Battalion, 18th Infantry, a North Vietnamese soldier charged toward the wire with a portable flamethrower. The enemy was killed however before he had a chance to fire.[22,23] Another documented case occurred in 1969 when elements of the 5th Infantry Division (Mechanized) encountered North Vietnamese troops with Soviet-made portable flamethrowers.[24]

Smoke and flame weapons have proven to be useful combat multipliers when incorporated into operations by skilled and inventive soldiers. A low-intensity conflict will put a premium on ingenuity and high technology alone may not carry the day. The versatility, simplicity, and efficiency of smoke and flame weapons would certainly seem to justify their consideration in a LIC environment.

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4. Willard Pearson, LTG, The War in the Northern Provinces 1966-1968, p. 5.

5. John H. Hay Jr., Tactical and Materiel Innovations, p. 30.

6. Ibid, p. 34.

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8. Hay, p. 95.

9. Ibid.

10. Steven Rose, ed., CBW: Chemical and Biological Warfare, p. 43.

11. Kleber and Birdsell, p. 15.

12. Stockholm International Peace Research Institute, Incendiary Weapons, p. 27.

13. Ibid, p. 39.

14. Ibid, p. 43.

15. U.S. Department of the Army, Field Circular 3-11-1, pp. 3-4.

16. Ibid, p. 2.

17. Rogers, p. 72.

18. John J. Tolson, LTG, Airmobility 1961-1971, p. 141.

19. FC 3-11-1, p. 3.

20. Stockholm, pp. 53-57.

21. Ibid.

22. Hay, pp. 48-49.

23. Pearson, p. 18.

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CHAPTER IV

RULES, ROLES, AND RECOMMENDATIONS

The inherent role of any combat support organization is to augment the combat power of the supported unit. The Chemical Corps is no different. To be useful, its members must be able to perform tasks which will enhance the effectiveness of the units they support in a variety of ways. To be truly effective, and thus be worthy of a fair allocation of already scarce resources, the Chemical Corps must be able to project its support across the entire spectrum of conflict. It is not enough to simply contribute under only one scenario. This study has focused on potential roles for Chemical Corps units and soldiers in low-intensity conflict by examining past performances. Before conclusions can be drawn, it is important to understand the underlying restrictions which can apply to chemical operations at all levels, the force structure which exists to support LIC and the possible missions which can be fulfilled.

NATIONAL POLICY

The national policy of the United States regarding chemical and biological warfare has been clearly stated. The US disavows any use of biological weapons and the first use of toxic chemical weapons. The US has, however, reserved the right to retaliate in kind with chemical weapons should an enemy ever employ them first.[1] This policy has been further reinforced by US

ratification in 1975 of the Geneva Protocol of 1925. In addition, President Ford, by means of Executive Order 11850, dated 8 April 1975, effectively imposed restrictions on the use of riot control agents (RCAs) and herbicides by US forces. Basically RCA use is limited to defensive operations in order to save lives under specific conditions. Herbicide use is restricted to the same regulations that apply for domestic use and then only within US bases and around immediate defensive perimeters. Even within these restrictions, specific Presidential approval is required before either RCAs or herbicides can be used by military forces.[2]

The rules outlined pertain to wartime conditions. In addition, the unclassified portions of the Joint Strategic Capabilities Plan (JSCP) highlight a requirement for commanders of unified and specified commands to address the use of RCAs in their plans and to submit those plans to the Secretary of Defense in order to obtain approval.[3] Thus, contingency planning for the use of RCAs must take place, but release authority must still come from the President and down through the chain of command. Current US training stresses the need for Presidential approval before any use of RCAs in war.[4] No attempt will be made here to define what actually constitutes "war" in the legal sense, particularly since the United States has not made a formal declaration of war since 1941. It is assumed that any involvement of US forces in combat operations would constitute a "war-state" and therefore any rules set forth for wartime conditions would apply.

CAPABILITIES

The review of the types of functions performed by chemical soldiers in other similar environments provides a key as to the types of missions which can and must be performed in a low-intensity conflict environment today or in the future. Obviously, given the continued proliferation of chemical and possibly even biological weapons, Chemical Corps personnel in LIC will have CB defense as their primary mission. The unique organization and equipping of light forces requires chemical personnel to not only have an in-depth understanding of CB warfare; they must also be ingenious and resourceful enough to modify the limited tools they have to meet any potential threat situation. The Chemical Corps is working to help. Major research efforts are currently underway to lighten the chemical defense load and still provide adequate protection. Projects include a less bulky, lighter-weight protective overgarment, pocket-sized chemical alarms, and hand-portable detectors.[5] Research is also underway to quantify the level of protection provided by standard issue clothing and equipment items such as ponchos and Goretex rainwear.[6] These developments and research results will provide chemical personnel with the equipment and knowledge necessary to exercise a great deal of flexibility in the LIC environment and still enable combat forces to operate effectively even in the face of a growing CB threat.

The most common, and perhaps key missions for chemical

personnel in LIC will probably come in other areas however. As demonstrated by experiences in Vietnam, Chemical Corps personnel are trained to be inventive and can be expected to do all they can to support the combat mission. Restrictions imposed by Executive Order 11850, coupled with the adverse publicity surrounding the use of herbicide Agent Orange in Vietnam[7] will probably combine to effectively preclude any herbicide use in a future LIC environment. At the very most, herbicide operations will conform to the letter of the Executive Order and be confined to the perimeters of US bases. Thus it is expected they would be solely ground-based and on an extremely small, perhaps even insignificant scale.

The possible employment of riot control agents in LIC is a different matter. Although EO 11850 appears extremely restrictive on the use of RCAs in time of war, chemical personnel must still have the expertise to plan for the employment of these weapons. Should Presidential approval be granted for tactical use of RCAs when requested by the Commander-in-Chief (CINC) of a unified or specified command, it will be Chemical Corps personnel who will have to be trained and ready to step forward and assume the mission. The relative success from the use of RCAs in Vietnam gives clear indications of potential uses, with perimeter defense, convoy and ambush protection, and operations in built-up areas offering the most promise. Integrated into the defenses of both tactical and logistical US bases, RCAs would provide a measured response if confronted by unarmed mobs of demonstrators or an effective enhancement to other weapons systems if attacked in

force. Should an attacker have no respiratory protection, he will be turned away; should he have protection, he will still be at a disadvantage to the defender due to the physical performance degradation caused by wearing a protective mask. The same logic could be applied to counter-ambush operations and convoy protection. Patrols carrying RCAs or vehicular mounted RCA munitions would be most effective in allowing forces to break contact if attacked by surprise and thus increase their survivability by reducing their vulnerability.

Flame weapons would appear to have a significant future as well in a low-intensity conflict environment. The effectiveness of flame weapons as a combat multiplier during the Vietnam conflict was demonstrated time and again. The impact of flame as a weapon coupled with the bonus effects of the psychological impact and night battlefield illumination ability, combine to make flame weapons a welcome addition to the arsenal of a combat unit. The area coverage aspect of most flame weapons also enhances their effectiveness in a LIC environment where precise targeting of enemy locations is difficult at best. The only flame weapon currently remaining in the Army inventory is the M-202 rocket launcher which is a derivative of the XM-191 which was tested in Vietnam.[8] With a range of 200 - 750 meters for point and area targets, the M-202 provides infantry units with an organic flame capability for attacking fortified positions without many of the limitations of the portable flamethrower. The bulk of the flame weapons which will be most useful in a LIC environment are the flame field expedients (FFEs). Developed almost into an art by

chemical personnel in Vietnam, the use of FFEs to enhance combat operations in LIC is almost beyond debate. Flame weapons provide a positive addition to any defensive position, either long term or hasty. The attractiveness of FFEs is increased for light forces who are generally limited in their combat load and the field expedient nature of these devices allows them to be constructed in large measure from materials readily available in any combat unit. The skills for building and employing FFEs are still taught to Chemical Corps personnel. As demonstrated during the Vietnam conflict, the applications for FFEs are virtually limited only by the imagination of the chemical soldiers constructing and employing them. Ground-employed or air-dropped, flame weapons can effectively produce casualties, provide early warning, or canalize the enemy. They constitute a true combat multiplier.

Current planning for combat operations in a LIC environment often overlooks the use of smoke and the positive impact it can have on combat operations. Although large area smoke operations by chemical smoke units were not routine during the Vietnam conflict, there were situations where this capability could have proven useful. One system which did prove its effectiveness was the XM-52 helicopter smoke system. The ability to rapidly lay down a smoke screen or curtain was found to be significant enough to justify the awarding of a contract for 121 of these systems.[9] The missions of screening landing zones, concealing air movement routes, covering medical evacuations, and augmenting deception plans are all still viable missions. The tendency of

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environment and second to demonstrate their capabilities in peacetime so they'll be prepared for war. The Chemical Corps

37ts positioned on the ground or dropped from helicopters enables chemical personnel to provide tactical smoke support even in restricted terrain. Smoke is a significant enhancement when observation is already limited by vegetation. Current developments in the field of smoke and obscurants promise to provide the commander with an even more flexible combat multiplier as techniques are developed which can defeat targe acquisition systems other than the human eye.[10]

CONCLUSIONS/RECOMMENDATIONS

The very nature of low-intensity conflict presents US forces with some very unique challenges. Despite the fact that within LIC itself there is a wide range of military involvement, the more intense environment of counterinsurgency operations still places a significant burden on the planner to ensure that every element contributes to the overall effort. As a review of past experiences indicates, there exists a very clear role for Chemical Corps forces to play in support of combat operations beyond their primary task of CB defense. It is absolutely essential that training and combat development efforts continue in the area of employment of smoke, flame, and riot control agents. Since the end of the Vietnam conflict, many of the weapons systems which were developed and tested there have been dropped from the inventory. It is critically important that these needs be studied to determine requirements so that we will have the proper

tools and munitions to do the job. Of primary concern should be the shrinking inventory of RCA and smoke munitions as well as delivery systems. Without a concerted effort now, we would once again find ourselves "behind the power curve" and having to experiment while engaged in a low-intensity conflict.

It is not enough to focus only on munitions and equipment however. Force structure must also be an item of concern. The light infantry divisions, which comprise one of the primary forces for employment in a LIC environment, are also light in organic chemical capability. One of the casualties in cutting the personnel spaces to reach a design criteria of 10,000 soldiers was the chemical defense company, which is organic to every other type division in the Army. The light division will be augmented, based on the threat assessment, with a dual-purpose (smoke/decontamination) company from the supporting corps. The bad news is that this is an augmentation only. The good news, however, is that the chemical infrastructure of the light division was not touched by the personnel cuts. The individual Chemical Corps soldiers at company, battalion, brigade, and division level are still present and these are the soldiers who primarily will carry the chemical mission role in LIC.[11]

Obviously, all that the future holds is not clear. While the US intends to strive to achieve some meaningful controls on the use of toxic chemical weapons, the spread of these weapons to Third World countries, coupled with their ease of manufacture, will continue to make CB defense a viable, meaningful mission for the Chemical Corps soldiers. While accurate predictions of the

future are difficult, there are many areas of research and development today which contain potential roles and missions for the Chemical Corps tomorrow, even in low-intensity conflict. Among these are such items as anti-materiel agents which attack equipment rather than personnel, incapacitants which might render combatants temporarily passive yet have no ill effects, obscurants which can defeat detection devices beyond the visible spectrum, and even directed energy weapons and improved blast technology. Exactly how this research may develop or what roles might evolve is not readily apparent, but the Chemical Corps can provide an ideal base of technically capable combat support soldiers who could effectively implement any resultant systems. The fact that there could well be applications in a LIC environment should be obvious. In the meantime, even while awaiting the results of the research, the plate is still adequately filled.

History has shown that the Chemical Corps soldier is flexible, resourceful, and often ingenious in his efforts to support his unit's combat mission. Clearly, there is a role for the Chemical Corps in a low-intensity conflict. That role will exist whether the enemy offers a current chemical/biological threat or not. It is important for commanders to first recognize the value of the contributions to be made and then insist that their chemical personnel "make it happen". For the chemical soldiers assigned to the units, it is necessary for them to first acquire and maintain the knowledge and skills necessary for a LIC environment and second to demonstrate their capabilities in peacetime so they'll be prepared for war. The Chemical Corps

itself must not confine its focus solely to the battlefield of Central Europe. If pro-active efforts are not continued, the lessons learned and expertise for LIC operations by chemical troops will be lost. Many of the munitions and weapons systems have already disappeared. The time to take action to reverse those trends is now.

ENDNOTES

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2. Executive Order 11850, p. 1

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4. FM 3-100, p. 1-2.

5. Lowry, LTC, "NBC Defense Equipment for Light Forces", p. 1.

6. Ibid, p. 2.

7. Harrison Donnelly, "Chemical Weapons: Push for Controls", p. 526.

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